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**REVISION RECORD**

Rev	Date	Description	POC	OIC
0	9/26/01	Initial issue.	Tobin Oruch, <i>FWO-SEM</i>	Mitch Harris, <i>FWO-SEM</i>
1	5/22/02	Adopted acronyms used frequently at LANL historically.	Tobin Oruch, <i>FWO-SEM</i>	Kurt Beckman, <i>FWO-SEM</i>
2	11/18/02	Eliminated unused/hardly-used historical acronyms, added shop equipment, other IDs	Tobin Oruch, <i>FWO-SEM</i>	Kurt Beckman, <i>FWO-SEM</i>
3	2/9/04	Body: loop numbering guidance; converted appendices to atts and reordered; clarified acronym disciplines are typical, not binding; added/clarified several fire acronyms.	Tobin Oruch, <i>FWO-DO</i>	Gurinder Grewal, <i>FWO-DO</i>
4	8/16/04	Changed suggested CMMS/MEL use of IDs to reference FWO IFMP Procedure AP-MNT-10. ID lists (App A) do not require ESB meeting prior to approval by Chief Engineer.	Tobin Oruch, <i>FWO-DO</i>	Gurinder Grewal, <i>FWO-DO</i>

**CONTACT THE RESPONSIBLE ENGINEERING STANDARDS POC**

for upkeep, interpretation, and variance issues

Ch. 1, 230	<a href="#">ESM General POC/Committee</a>
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## 230 COMPONENT NOMENCLATURE

### 1.0 DEFINITIONS

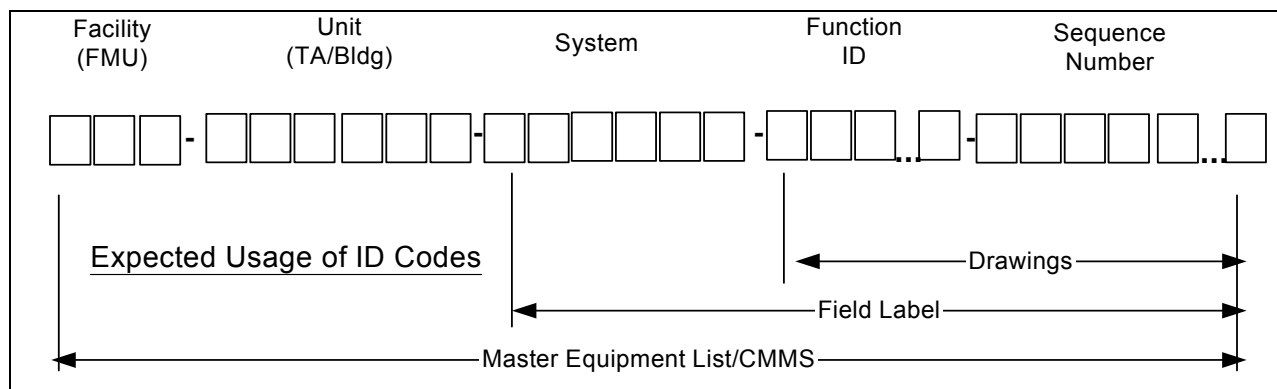
<b>CMMS</b>	Computerized Maintenance Management System (e.g., PassPort)
<b>FMU</b>	Facility Management Unit; a site portion having the same management/maintenance program
<b>M&amp;TE</b>	Measuring and Test Equipment; items are generally portable
<b>MEL</b>	Master Equipment List
<b>TA</b>	Technical Area (e.g, TA-3)

### 2.0 EXISTING FACILITY GUIDANCE

- A. *For existing buildings it is generally preferable that the original nomenclature/labeling conventions continue to be used, wherever practical. In facilities where multiple labeling conventions may be already in use, the convention below, an existing one, or some hybrid of existing and new may be selected as the organizational standard. The Function IDs in Attachment 1 should be used for equipment and component identification whenever possible to promote data standardization at LANL.*
- B. *It may be necessary to add a system identifier to the original convention to obtain unique component identification and labels in the field. Labels applied to the components should be a combination of the standard identification code and a concise and meaningful verbal description of the function (i.e., the noun name -- like "XXXX Feed Pump" or "Bldg XXX Main Breaker") for the item being identified. Labeling is further addressed at the end of this document.*

### 3.0 NEW FACILITIES AND MAJOR MODIFICATIONS

- A. For new facilities, the identification code in its full form shall be composed of the following five fields as shown in Figure 230-1: Facility (FMU), Unit (TA+Bldg), System, Function ID, and Sequence Number. All or part of this string is employed depending on usage; see below.



**Figure 230-1 - Identification Code**

- B. Use of the CMMS as the MEL is controlled by [FWO IFMP Procedure AP-MNT-10](#), *Master Equipment List and Maintenance History*.
- C. Explanation of the identification code fields:

**FACILITY** - Identification of the FMU; 3 characters maximum. Used in LANL's CMMS database, but typically not on design documents or field labels (e.g., *F01*).

**UNIT** – A concatenation of the TA and Building; maximum of 6 characters. For example, TA-3, Building 1498 would be 031498. This is used in CMMS and may be omitted from each component's identification in design documents and facility procedures if the TA and Building are identified on the document (e.g., title block of drawing, header or title of procedure). *Utilities outside a building typically use 0000 for the building number; if no single TA use 000000 in CMMS.*

**SYSTEM** - Identifies the system. Acceptable system acronyms are controlled by ESM Chapter 1, Section 210. The system acronym alone is 2-5 letters, and the total maximum number of characters in the CMMS Operating (Op) System field is six (6).

#### Optional Subsystems and Suffixes

Section 210 lists several subsystem acronyms that can be used if a manager determines the added complexity will improve operations. In addition -- if a facility or operation desires and controls them internally – additional, non-listed subsystems can be created by adding suffixes to the approved system acronyms - as long as it does not create confusion by making the result identical to any other system/subsystem acronym already in Section 210. Dashes before suffixes are allowed.

*Guidance: For example, from looking in Section 210's Att. 1 Table 210-A1-3 Subsystem column, acceptable subsystem acronyms for hypothetical, multiple Potable Water subsystems are PW-A and even PWB (no hyphen example). However, PW-C is not because PWC is reserved for the Potable Water Cold designation on drawings, and PW-C is very similar to PWC and may cause confusion.*

*Some subsystem/drawing column listings in Section 210 Att. 1 Table 210-A1-3 are included to acknowledge and codify common drafting and field labeling practices for pipe identification (e.g., CWR for Cooling Water Return). This codification helps eliminate future conflicts similar to the LTGE example above. However, when a suffix is used in this way, related drawings and system design descriptions should either explain this as a drafting practice or treat them as legitimate subsystems.*

**FUNCTION ID** – This is the equipment or component's function identifier, a 1-6 character alphabetic code (generally an acronym) that identifies the function performed by the equipment or component (hereafter both are generally referred to as Component).

*Guidance: CMMS captures this Function ID field (together with the "Sequence Number" described further below) in the 15-character CMMS "Equipment" and "Component Number" fields (the CMMS type field, which contains a general category of the component, is not controlled by this Section 230, but by FWO-MSE via [FWO IFMP Procedure AP-MNT-10](#)).*

The Function ID shall be chosen from the Appendix A listings.<sup>1</sup> This Appendix contains the component function IDs in three attachments (sorted three ways to facilitate selection and use).

The listings include a “Discipline” indicator. It represents the engineering discipline most commonly associated with the ID. This is included to aid ID selection, particularly in Attachment 2 which is sorted by discipline first; however, this discipline categorization does not preclude using the acronym for disciplines other than that indicated.

For electrical utilities: The numerical designations from IEEE 803.1 (e.g., “52” can be used on electrical utility drawings but alpha acronyms are generally preferable).

- When a new project’s manager prefers to use historically used acronyms, this can be allowed by the ESM Chapter 1 POC with written permission.
- When an item is not listed in Appendix A, contact the ESM General POC (*contact info is on the Chapter 1 webpage*) for assistance.  
<http://www.lanl.gov/f6stds/pubf6stds/engrman/1mpro/htmls/adminpro2.htm>
- *The POC’s process for resolution should be:*
  1. *Determine if one of the referenced national standards, another national standard, and/or a printout of historically used acronyms lists a unique and suitable 6-character-maximum Function ID for the component (App. A has many common components, not the entire set).*
  2. *Choose an appropriate Function ID weighing historical precedent against national standard alignment.*
  3. *Grant the requestor provisional OK to use it, and initiate a revision to listing.*
  4. *In general, when a new component function is reasonably similar to a recognized component/ID, use the recognized Function ID rather than devising a new one.*

**SEQUENCE NUMBER** – this is an alphanumeric code that provides a unique identification for each component. This can be employed in a number of ways. *Ordinarily the Sequence Numbers are assigned beginning with 1, 01, 001, or 0001 (use of zeros is a formatting choice), and typically progress in ascending order (e.g. 1, 2, 3, etc).*

As a minimum, the Sequence Number assignment shall provide uniqueness within a System or Subsystem (in this case, the same Sequence Number can be reused with different Function IDs). *Sequence Numbers can also be chosen to be entirely unique within a facility (Sequence Number is not reused when Function ID changes).*

*Only upper-case alpha characters and numbers should be used in the makeup of a component Sequence Number. Other characters allowed are the dash (-), period (.), and ampersand (&) symbol. No other symbols should be used in the makeup of a component number. Non-recommended symbols include the plus (+), the under-score symbol (\_), the forward-slash and the back-slash symbol (/ or \), single or double quotes (‘ or ”), percent symbol (%), brackets ( [ ] ), parenthesis’s [ ( ) ], etc (such symbols affect various software programs and can yield unexpected/unintended results).*

#### Instrumentation Loop Numbering

Beyond simply providing a unique component number, added intelligence shall be built into this field for instrumentation and may be used for other applications. Instruments in a loop shall have the same sequence number. *For example, the primary element, transmitter, controller, and final control element for a control loop should all have the same number, e.g.: TE-102, TT-102, TIC-102, and TCV-102.*

For loops with multiple components of the same type, add an upper case letter to the component number for each of the duplicate components. *For example, if there are three temperature elements, they would be TE-102A, TE-102B, and TE-102C.*

To avoid any duplication of the numbers in the master equipment list (MEL), the sequence number shall be followed by a dash and the parent component designation if present. *For example, a temperature element on HVA-1 could have a sequence number of 102A-HVA-1.*

*When utilized in a P&ID drawing, the instrument bubbles should contain the Function ID and the first part of the sequence number excluding the subsystem designation, e.g.: TE-102A. Because the P&ID drawings are typically applicable to only one subsystem, the subsystem designation will be shown in the title block and is not needed in the instrument bubbles.*

*When utilized in an instrument list applicable to multiple subsystems on a drawing, the subsystem designator can be attached with a dash or added in a separate column to ensure a unique instrument number.*

*The recommended maximum number of characters for the main Sequence Number for instruments is four plus two for alpha subcodes.*

The LANL Engineering Standards I&C POC can grant variance to the I&C sequence number requirements above.

#### Electrical Suffixes

Suffixes shall be used for electrical systems as follows:

1. Apply suffixes in ascending order, if more than one unit per structure.
2. Suffix the Sequence Numbers based on system voltage as follows (in existing facilities, coordinate the assignment of equipment code suffixes with the Facility Manager)<sup>2</sup>:
  - With a number if the system voltage is in excess of 1000V (e.g. 13.8 kV). Example the third 13.8 kV motor-operated disconnect switch in a substation will be identified DMO-3.
  - With a letter if the system voltage is in excess of 250V but less than 1000V (e.g. 480Y/277V). Example: The second 480Y/277V power panelboard in a building will be identified PP-B.

- With a number if the system voltage is 250V (e.g. 208Y/120V) or less.  
Example: The fourth 208V lighting panelboard in a building will be identified LP-4.

3. Add suffix IG for isolated-ground panelboards. Example: LP-1-IG.

#### Other Suffix Guidance

*A suffix may also be used as follows:*

- *Where associative coding is used to associate one or more similar components with a primary component (e.g., a parent-child relationship). Ordinarily the suffix is an alpha character. An example of this might be a primary control relay fed by an array of secondary relays: the primary might be numbered 001 while the subrelays are numbered 001A through 001Z.*
- *For certain power distribution components, it is allowable to show the alpha acronym as well the numerical device function number. For example, an AC circuit breaker Function ID might be "CBA," but it is also listed as a "52;" thus one could choose to include both in the identification code – e.g., CBA52-1.*
- *To indicate room number.*

#### D. Labeling/Tagging:

1. Follow labeling requirements in LANL Construction Specifications [15075](#), Mechanical Identification, and [16075](#), Electrical Identifications; ESM Chapter 7, Electrical; OST 310-00-00, *Conduct of Operations Implementation Manual*; and Chapter 1 Section 240, Labeling (possible future).
2. Additional requirements and guidance is contained in [LIR 402-100-01](#), "[Signs, Labels, and Tags](#)," associated [LIG 402-100-01](#), [Signs, Labels, and Tags](#), and the "[Sign Catalog](#)."

#### E. Example:

For a gas-fired furnace in TA-3-410:

CMMS Fields:

FMU	Unit	Operating Sys	Equipment
81	030410	HVAC	FGF-1

#### ***Tag on Furnace:***

03	HVA-FGF-1 East Wing Furnace	410
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*HVAC flow diagram's furnace symbol label:*

**FGF-1**

## 4.0 APPENDICES

APP 1: Component Function ID's

Attachment 1: Component Function ID's – sorted by description

Attachment 2: Component Function ID's – sorted by predominant discipline, then description

Attachment 3: Component Function ID's – sorted by ID

### ENDNOTES:

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1 The following documents were used to develop the Component ID listings:

- ASME Y14.38-99, *Abbreviations and Acronyms*
- IEEE 803.1-92, *Recommended Practice for Unique Identification in Power Plants and Related Facilities - Component Function Identifiers*
- IEEE 1015-97, *IEEE Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems (Blue Book)*
- IEEE 1100-99, *Recommended Practice for Powering and Grounding Electronic Equipment (Emerald Book)*
- ISA 5.1-92, *Instrumentation Symbols and Identification (reaffirmation of ISA S5.1)*
- NECA 100-99, *Symbols for Electrical Construction Drawings*
- NFPA 170-99, *Standard for Fire Safety Symbols*
- CMMS file showing current usage of acronyms

The process was:

A comprehensive listing of components was produced from national standards, CMMS, D. T. Bush memo FSS-9/MM-95-048, and the 1999 LANL drafting and engineering standards manuals. This was then thinned to include the most commonly used and expected components. To assign IDs, historically used IDs in widespread use were retained. This was augmented by IEEE 803.1. For instruments, if IEEE referenced ISA, then ISA was listed as the source. For electrical/I&C, when 803.1 did not provide sufficient granularity or did not list a component, it was augmented by ISA, NECA, or IEEE 1100. For mechanical, ASME was used to augment IEEE; NFPA and NECA provided fire-related IDs in rare instances. Finally, in a few rare cases, it was necessary to modify national acronyms where the above documents were non-unique from one to the next (e.g., the instrument “Final Element, Flow” was designated FE@ and reflected as “5.1mod” to distinguish it from “Fan, Exhaust” which is commonly designated “FE” at LANL). IEEE C37.2-1996, *Standard Electrical Power System Device Function Numbers and Contact Designations*, was reviewed and found to duplicate the device numbers in IEEE 803.1; likewise an informative listing in Annex E of NFPA 79-1997, *Electrical Standards for Industrial Machinery*, was reviewed but not utilized.

2 This method of designating system voltage has been used at LANL for many years per D. Powell.